

In the Claims:

For the convenience of the Examiner, all pending claims of the application are reproduced below. Please amend the claims as follows:

N. S. 1. A breakaway support post for mounting a guardrail thereon as part of a highway guardrail system comprising:
an elongated body having a first end and a second end;
means for attaching the guardrail adjacent to the first end of the elongated body;
a plurality of slots formed in the elongated body intermediate the first end and the second end; and
the elongated body having a cross section and the slots oriented with respect to the cross section whereby an impact with one end of the attached guardrail will tend to buckle the breakaway support post and the breakaway support post will resist a rail face impact with the guardrail.

N. S. 2. The breakaway support post of Claim 1 wherein the elongated body further comprises:
a metal I-beam having a web with a pair of flanges attached thereto; and
the slots formed in the flanges of the I-beam.

N. S. 3. The breakaway support post of Claim 1 wherein the means for attaching further comprises a block disposed between the first end of the elongated body and the guardrail to form a lateral offset between the guardrail and the breakaway support post.

N. S. 4. The breakaway support post of Claim 1 further comprising at least one soil plate attached to the elongated body adjacent to the elongated slots.

sub 52 1. **(Amended)** A breakaway support post for mounting a guardrail thereon as part of a highway guardrail system comprising:

- an elongated body having an upper portion and a lower portion;
- a rotatable coupling assembly disposed between the upper portion and the lower portion of the elongated body;
- the upper portion of the elongated body having a first end;
- the lower portion of the elongated body having a second end which may be inserted into the soil adjacent to a roadway;
- means for attaching the guardrail adjacent to the first end of the upper portion; and
- means for releasably securing the upper portion of the elongated body in a generally **[aligned] collinear alignment** with the lower portion of the elongated body **[whereby] such that** an impact with one end of the attached guardrail will tend to rotate the upper portion of the elongated body relative to the lower portion of the elongated body and the breakaway support post will resist a rail face impact with the guardrail.

N-7 6. The breakaway support post of Claim 5 wherein the rotatable coupling further comprises:

- a first U-shaped bracket and a second U-shaped bracket with portions of the first bracket disposed within the second bracket; and
- a pivot pin extending laterally through adjacent portions of the first bracket and the second bracket whereby the upper portion of the elongated body may rotate relative to the lower portion of the elongated body.

11. 7. The breakaway support post of Claim 5 wherein the upper portion of the elongated body and the lower portion of the elongated body further comprise:
a metal I-beam having a web with a pair of flanges attached thereto;
a respective bracket attached to adjacent ends of the upper portion and the lower portion;
and
a pivot pin extending through the brackets and aligned approximately parallel with the web of the upper portion whereby the breakaway support post will resist a rail face impact with the guardrail.

~~Sub 1 & 8.~~ (Amended) The breakaway support post of Claim 5 further comprising a block
[disposed between the guardrail and] affixed to the upper portion of the elongated body and
adapted for mounting the guardrail to form a lateral offset between the guardrail and the
breakaway support post.

Sub 1 & 2
B4

9. (Amended) A breakaway support post for mounting a guardrail thereon as part of a highway guardrail system comprising:
an elongated body having an upper portion and a lower portion;
the upper portion of the elongated body having a first end;
the lower portion of the elongated body having a second end;
means for attaching the guardrail adjacent to the upper portion; and
means for coupling the first [portion] end of the elongated body with the second [portion] end of the elongated body [whereby] such that an impact with one end of the attached guardrail will tend to rotate the first portion of the elongated body relative to the second portion of the elongated body and the breakaway support post will resist a rail face impact with the guardrail.

Sub 16 10. (Amended) The breakaway support post of Claim 9 wherein the means for coupling the first end [portion] with the second end [portion] comprises first and second breaker bars.

11. The breakaway support post of Claim 10 wherein the first and second breaker bars are formed with respective chambered surfaces to facilitate rotation of the upper portion relative to the lower portion and to facilitate separation of the upper portion of the elongated body from the lower portion of the elongated body.

12. The breakaway support post of Claim 10 wherein the first and second breaker bars further comprising protruding members to facilitate rotation of the upper portion relative to the lower portion and to facilitate separation of the upper portion of the elongated body from the lower portion of the elongated body.

13. A roadway guardrail system, comprising:
a guardrail;
at least one support post having an upper portion and a lower portion, the upper portion having a lower end and the lower portion having an upper end;

the upper portion being coupled to the guardrail and the lower portion being structured and arranged to be located in the earth;

the upper portion lower end comprising a first member and the lower portion upper end comprising a second member;

the first and second members being coupled together with at least two rods, the rods laying along an imaginary line that extends on a strong direction, wherein the post exhibits a high mechanical strength in the strong direction, there being a weak direction that is generally

perpendicular to the strong direction, wherein the support post exhibits a low mechanical strength in the weak direction; and

at least one spacer located between the first and second members, there being a gap on at least one side of the imaginary line, wherein the upper portion can rotate relative to the lower portion in the weak direction when subjected to a force.

✓ 14. The roadway guardrail system of Claim 13 wherein the upper and lower portions comprise I-beams, each of the I-beam portions having a web, with the web of the upper portion being generally aligned with the web of the lower portion, and with the imaginary line extending generally in the same direction as the webs.

✓ 15. The roadway guardrail system of Claim 13 wherein the rods further comprise bolts secured by nuts.

✓ 16. The roadway guardrail system of claim 13 wherein the first and second members each comprise flanges that extend transversely from a longitudinal axis of the respective upper and lower portions.

✓ 17. The roadway guardrail system of claim 13 wherein the spacer comprises a projection that extends from one of the first and second members and that bears on the other of the first and second members.

✓ 18. The roadway guardrail system of claim 13 wherein the spacer comprises two projections, with each projection extending from a respective one of the first and second members, the projections generally bearing on each other.

✓ 19. The roadway guardrail system of claim 13 wherein the spacer comprises stops located on the rods.

✓ 20. The roadway guardrail system of claim 13, further comprising:
the upper and lower portions are I-beams, each of the I-beam portions having a web, with the web of the upper portion being generally aligned with the web of the lower portion, and with the imaginary line extending in the same direction as the webs;
the rods are bolts secured by nuts;
the first and second members each comprise flanges that extend transversely from a longitudinal axis of the respective upper and lower portions; and
the spacer comprises a projection that extends from one of the first and second members and that bears on the other of the first and second members.

✓ 21. The roadway guardrail system of claim 13, wherein:
the upper and lower portions are I-beams, each of the I-beam portions having a web, with the web of the upper portion being generally aligned with the web of the lower portion, and with the imaginary line extending in the same direction as the webs;
the rods are bolts secured by nuts;
the first and second members each comprise flanges that extend transversely from a longitudinal axis of the respective upper and lower portions; and
the spacer comprises stops located on the rods.

✓ 22. A roadway guardrail system, comprising:

a guardrail;

at least one support post having an upper portion and a lower portion, the upper portion having a lower end and the lower portion having an upper end;

the upper portion having a first side that is coupled to the guardrail and the lower portion being structured and arranged to be located in the earth;

the upper portion lower end comprising a first member and the lower portion upper end comprising a second member;

the first and second members coupled with each other by a pin located along an imaginary line extending along a strong direction, wherein the support post exhibits a high mechanical strength in the strong direction, there being a weak direction that is generally perpendicular to the strong direction, wherein the support post exhibits a low mechanical strength in the weak direction, the pin being located on the first side of the upper portion; and

at least one spacer located between the first and second members, there being a gap on at least one side of the imaginary line, wherein the upper portion can rotate relative to the lower portion in the weak direction when subjected to a force.

✓ 23. A roadway guardrail system, comprising:

a guardrail;

at least one support post, the support post comprising an I-beam having a web and flanges, the support post having a first end and a second end, the first end being coupled to the guardrail and the second end being structured and arranged to be located in the earth; and

the flanges having vertical slots therein located near the surface of the earth when the support post is located in the earth.

Sub Is > 1 24. (Amended) A roadway guardrail system comprising:
a guardrail;
at least one support post having an upper portion and a lower portion, the upper portion having a lower end and the lower portion having an upper end;
the upper portion being coupled to the guardrail and the lower portion being [structured and arranged to be located in] insertable into the earth;
the upper portion lower end being pivotally coupled to the lower portion by a hinge, the hinge having a pivot pin that extends in a strong direction which is substantially perpendicular to the guardrail, wherein the post exhibits a high mechanical strength in the strong direction, the hinge having a weak direction that is generally perpendicular to the strong direction, wherein the upper portion can rotate relative to the lower direction from an impact in the weak direction; and
B5 the hinge is releasably restrained from pivoting by a shear pin, the shear pin being smaller in diameter than the pivot pin.

10 25. (Amended) The roadway guardrail system of Claim 24 wherein the upper and lower portions each comprise an I-beam [with] having a web and flanges, the webs of the I-beams being oriented generally perpendicular to the guardrail.

26. The roadway guardrail system of Claim 24 wherein the hinge comprises:
a first U-shaped bracket and a second U-shaped bracket with portions of the first bracket being disposed within the second bracket; and
the pivot pin extending laterally through the first bracket and through adjacent portions of the first bracket and the second bracket whereby the upper portion of the post can rotate relative to the lower portion of the post.

N.S. 27. The roadway guardrail system of Claim 24 wherein the hinge has a first bracket coupled to the upper portion and a second bracket coupled to the lower portion, the first bracket receiving the pivot pin by a slot, the slot being oriented so that when the upper portion is rotated relative to the lower portion, the upper portion can separate from the lower portion.

Sub D1 28. (Amended) A support post for mounting a guardrail thereon as part of a highway guardrail system comprising:

an elongate body having a first portion and a second portion arranged in a substantially collinear relationship;

a frangible connection for coupling the first portion with the second portion, the frangible connection including a rotatable coupling assembly disposed between the first portion and second portion of the elongate body; and

the frangible connection oriented relative to the guardrail [whereby] such that an impact with one end of [the] a guardrail coupled to the support post will tend to buckle the support post and the support post will resist [a rail face] an impact with a railface of a [with the] guardrail coupled to the support post.

136 29. (Amended) [The] A support post [of Claim 28 further] for mounting a guardrail thereon as part of a highway guardrail system comprising:

[the] an elongated body having a first [end and a second end; and] portion defining a first end of the elongated body and a second portion defining a second end of the elongated body;

a frangible connection for coupling the first portion with the second portion;
and

a plurality of slots formed in the elongated body intermediate the first end and the second end to define in part the frangible connection, the frangible connection being oriented

~~relative to the guardrail such that an impact with one end of the guardrail will tend to buckle the support post and the support post will resist a rail face impact with the guardrail.~~

B6
(cont'd)

A



Please cancel Claim 30 without prejudice or disclaimer.

N-1. 31. The support post of Claim 28 wherein the frangible connection further comprises a releasable hinge.

Subj 2 32. (Amended) A support post for mounting to a guardrail as part of a highway guardrail system, comprising:

a first elongated member having first and second ends, with the first end of the first member ~~[being structured and arranged to couple to the]~~ adapted to receive a guardrail;

a second elongated member having first and second ends, with the first end of the second member being ~~[structured and arranged to be inserted]~~ insertable into the ground adjacent to a roadway;

one of the second ends having a ~~[pair of first flanges]~~ first bracket with a generally U-shaped configuration extending therefrom [*B*, the first flanges being separated from each other by a gap];

the other of the second ends having a second ~~[flange]~~ bracket extending therefrom;

the second ~~[flange]~~ bracket being received in the ~~[gap between the first flanges]~~ the first U-shaped bracket;

the first and second ~~[flanges]~~ brackets being coupled together by a pin extending along an axis substantially perpendicular to a received guardrail, wherein the first and second members are rotatably coupled ~~[together so as to move between a lengthened position and a shortened position]~~; and

B

*D2
Cont* 13 the first and second members being maintained in [the lengthened] a first position by a shearable body extending between the second [flange] bracket and at least a portion of the first U-Shaped bracket [one of the first flanges].

Sub Inv 14 33. (Amended) A support post for mounting to a guardrail as part of a highway guardrail system, comprising:

a first I-beam having first and second ends, with the first end of the first I-beam being structured and arranged to couple to the guardrail;

a second I-beam having first and second ends, with the first end of the second I-beam being [structured and arranged to be inserted] insertable into the ground adjacent to a roadway;

*b7
(cont'd)* each of the first and second I-beams having a web and flanges, with the flanges at the respective second ends having extensions protruding beyond the web;

the extensions of the first I-beam being located adjacent to the extensions of the second I-beam, the extensions of the first and second I-beams being pivotally coupled together by a hinge pin so that the first and second I-beams pivot about an axis that is parallel to the web of the first I-beam[;

the first I-beam pivoting with respect to the second I-beam] between a lengthened, substantially collinear position and a [shortened] non-collinear position; and

the first and second I-beams being maintained in the lengthened position by a shearable member extending between at least one of the extensions of the first I-beam and at least one of the extensions of the second I-beam.

Please cancel Claims 34 and 35 without prejudice or disclaimer.

Please add the following new Claim 36:

Sub Inv 15 36. A roadway guardrail system, comprising:
a guardrail;
at least one support post having an upper portion and a lower portion, the upper portion having a lower end and the lower portion having an upper end;
the upper portion being coupled to the guardrail and the lower portion being insertable into the earth;
the lower end of the upper portion being coupled at the upper end to the lower portion by a rotatable coupling that rotates about an axis when the post is impacted in a direction that is generally parallel to the guardrail, the axis being substantially perpendicular to the guardrail, the post exhibiting a high mechanical strength in the direction of the axis; and
the rotatable coupling having a frangible connection for maintaining the upper portion in an upright alignment with respect to the lower portion. --

REMARKS

Applicant has carefully reviewed this application in light of the Office Action mailed February 17, 2000 (Paper No. 9). The specification has been amended to obviate the Examiner's objection. Claims 1-35 are pending in the application. Claims 1-4, 10-23, 27, 29 and 31 have been withdrawn from consideration by the Examiner. Claims 5, 8, 9, 24, 25, 28, 30 and 32-35 stand rejected. Claims 6, 7, and 26 are objected to as depending on rejected independent claims. Claims 5-10, 24, 25, 28, 32, and 33 have been amended to more clearly claim the Applicant's invention. Applicant notes with appreciation the Examiner's acknowledgment of the Election